Health

A Journal Devoted to Healthful Living

Edited By Dr. U. Rama Rau & U. Krishna Rau. M.B.B.S.

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EDITORIAL

HEALTH'S TRIUMPH.

Have you ever heard of health germs? Perhaps not. But, we dare say you are sufficiently acquainted with disease germs. There are a host of them, for instance, the cholera microbes, the typhoid bacilli, the malarial parasites, the tubercular germs and so on, which play considerable havoc and ruthlessly destroy mankind. The Health germs exist in every individual in the universe but they are dormant, being enclosed by strong bars of poverty, ignorance and superstition. "To overthrow superstition, to protect motherhood from pain, to free childhood from sickness, to bring health to all mankind, these are the ends for which, through the centuries, the scholars, heroes, prophets, saints and martyrs of medical Science have worked, and fought and died", and the illustrious names of Florence Nightingale, Edward Jenner, Louis Pasteur and Lord Lister have been associated with the prevention of illness and the betterment of the human race. Science and industry, mass education and ceaseless propaganda have helped to break open the barriers of poverty, ignorance and superstition in Europe and America and in all civilized countries and rouse the dormant health germs to activity and successful resistance to diseases. The result is that mortality and morbidity rates in these countries have gone surprisingly low and people there, now enjoy good health and stamina. In India, however, the tale is different. India is still steeped in ignorance and continues to be the favourite home of superstition. Education has not reached even 4% of the 350 millions of its population, and the country is yet industrially and consequently economically back-ward. The task of the propagandist to mobilize the health germs or, in other words, to arouse the sanitary and civic consciousness of the people, to train them in health cult, and lead them in battle array against disease

germs has thus been rendered extremely difficult if not altogether impossible.

Our "Health" has been engaged during the past ten years in this hard task of fighting disease and bestowing health on the people of India and in this we think it has triumphed. 'Health' we are sure, has done a good deal in dispelling the ignorance of the masses and inducing people to shake off their lethargy and age-long superstitions. Its votaries are steadily growing in numbers, which is proof positive of its popularity and a mark of appreciation of its worth.

On the 1st of January 1933, "Health" enters its eleventh year of existence, and as on the last occasion, as a souvenir, we have converted its first issue into a Special Number. It contains double the number of pages of an ordinary issue. We had invited eminent men in the Medical Profession and among the lay public to contribute to the Special Number and the response was splendid. Being unable to publish all the articles received within the limited space at our disposal, we were obliged to withhold some for future issues and due acknowledgments of such articles have been made in this Special Number. We hope their authors will pardon us and condone our action.

In this connection, we beg to inform our readers that we have opened a Press of our own, "*The Antiseptic Press*", and our "Health" will hereafter be printed in that Press, commencing with this Special issue. The press is manned by expert hands and supervised also by experts, and the types, machinery and other accompaniments are all new. The installation of this Press, will, we hope, ensure regularity in the publication of the journal, which is a great desideratum.

In fine, we wish on this happy occasion of the eleventh birthday of "Health" and the New Year day, which luckily falls on the same date, all our contributors, subscribers and advertisers, a happy, healthy and prosperous *New Year*.

ACKNOWLEDGMENT.

The Editors acknowledge with thanks the receipt of the following contributions for the Special Number but regret they could not be published for want of space. They will be published in subsequent issues.

Dr. B. K. Wadia, M.B., L.O., B.Sc., Calcutta. *Prevention of Short-Sight.* Dr. V. K. Venkitaswami, M.B., B.S., F.I.M., Madras. *The use of Oils, Ghee, and Honey in Domestic Indian Medicine.* Dr. C. V. C. Rao, Madras. *Causes of Ill-health in Children and Advice to Parents.* Dr. Charles Hooper, Idaho, U. S. A. *The Blessings of Health.* M. V. Narasimha Rao, Berhampore. *A few hints on disposal of body's waste.* Dr. R. P. Saxona, Raniganj Ajgara. *Baths.* Rao Bahadur, Dr. M. Kesava Pai, O.B.E., M.D., Madras. *The real causes of Tuberculosis.* Dr. R. S. Agarwal, Bulandshahr. *Shine Your Eyes.* Capt. A. P. Pillai, O.B.E., M.B., B.S., Bombay. *Behold, A Sower Goeth Forth to sow.* Dr. Mrs. Anna Thomas, Karachi. *Some thoughts of a Maternity and Child welfare worker.* Dr. Edward Podolsky, M.D., Brooklyn. N. Y. *The Medicinal value of Onions.* Dr. G. L. Saxona, M.R.A.S., Partabgarh City. *Artificial feeding of Infants.* Dr. J. Roy, Nowgong, Assam. *Fly Danger.* Dr. K. G. Menon, Vayithiri. *Itch (Scabies) how caused, with a few hints on its prevention and cure.* Dr. G. Raghunatha Rao, Purulia. *Some Health Lessons from an Ancient Hindu Scripture.* Dr. R. L. Soni, M.B., B.S., Paungde (Burma). *A General Talk with the Consumptives.* Dr. A. Rakshit B.Sc., M.B., Calcutta. *Properties and Relative importance of Foods.* Dr. P. Ahuja, M.B., B.S., Karachi. *Health in the Great.* Dr. C. G. Mahadeviah, M.B., B.S., Una Kathiawar. *Health for Students.* 2. *Contraception.*

YOGA HEALTH IDEALS

BY

SHRI YOGENDRA

Founder of the Yoga Institutes in India and America, author of the Scientific Yoga Series (12 Vols.), Pocket Health Series (10 Vols.) Etc. Etc. Post Box 481, Bombay.

Medical men value health for the health's sake for human life is rare and good health is still rarer. Of course, good health in its ideal sense, under modern conditions of unnatural living, is rarest. A layman looks upon health from a business point of view, that is just the way we have learned to look upon practically everything from breakfast to God, as an invaluable asset for it enhances happiness and prosperity. A materialist of the atheist-type strives for it because in the terms of mundane good, health is considered as the sum-total of all his endeavours and the only means to his worldly enjoyments.

Health is man's natural privilege; and if one lives right, it is easier to be healthy than to be sick. In our present struggle for existence, really, it pays to be healthy for health is cheaper while sickness is expensive. Irrespective of one's station in life or engagements, health, besides being an enjoyment in itself, is an essential factor of success in the achievement of the various objects of life, may he be an athlete, a physical culturist, a poet, a scientist, a philosopher or even a mystic. It aids by removing physical obstacles for it keeps one free to do whatever he pleases and to persue his course of life without suffering of physical indisposition. That we of the modern world with a definite value for this physical body appreciate health is nothing unnatural but the ancient seers whose consideration to the earthly body was secondary and whose sole object in life was to divine the Things Beyond should have equally valued good health is certainly remarkable.

But this is not all; for, what is still more remarkable is the many aspects from which health has been viewed as being imperative and that too not from the modern spirit of physical culture but from the ancient notion of spiritual culture where lives were devoted more to life after death than the life in this world. These ancient Yogins of India have therefore a message for the modern health-seekers showing a rational but definite purpose of good health and the most direct and effective means for its acquisition. In this little article, it is not possible to treat of the Yoga physical culture fully. What at best, therefore, could be done is to outline a few of its important aspects.

1. The object of physical culture as taught by Yoga is primarily to enhance physical well-being of an individual leading gradually to the development and maintenance of physical, mental, moral and spiritual health.

2. After acquiring exuberant and exultant health, one should aim at complete control and mastery of the whole physical being bringing all the involuntary functions of the body under direct control of the Will.

3. With the power of control over the body, one should proceed to cultivate and multiply physical efficiency which means the maximum of both health and strength which make it possible for one to achieve whatever is desired by being capable of exhibiting the latent powers of his physical being to its fullest capacity.
4. When the height of physical perfection is reached, one should turn his attention to the control and culture of the mind through purification of the body. This is considered as a stepping stone leading simultaneously to the purification of the mind and moral and spiritual elevation. It consists in keeping the body not only ordinarily healthy, but keeping it in its state of absolute purity through processes of internal and external cleansing.

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Shree Yogendra in *Siddasana* posture of Yoga.

5. Then after the mental and spiritual progress is in view, to extend the period of life by defying and getting beyond old age and death, and thus gain time to complete the course of selfculture during one's lifetime.

Unlike other spiritual systems that discard bodily health, Yoga, has placed definite value to body-culture and has formulated a course of physical culture much in harmony to comply with the above ideals of health. Thus, every student of Yoga right in the beginning is made to realize most thoroughly and definitely that the physical well-being of an individual is the only highest means of attaining whatever is desired. Health is therefore a sacred duty of a yogin and a daily necessity for even the slightest indisposition of the body disqualifies the student for further progress in his Yoga endeavours. Yoga says that even a thousand ton of gold cannot buy a moment of life and that good health really is the primary requisite of all religious merits and endeavours. According to Goraksa, the great Yogin, how can one hope to achieve success in life when he does not know how to care for his own body. It is true that without a knowledge of health principles no one is fitted for life's responsibilities.

In contrast with the general notions, it has become evident that the modern physical culture is merely a scheme of muscle and body training. But strength does not necessarily impart health. It is significant to note in this respect that many of the athletes both in the East and the West suffer from acute or chronic diseases of many kinds. Yoga not only emphasises the need for health before strength but it also pays greater attention to the *internal* health than the external. The essentials of the Yoga physical culture are therefore worthy of study and may be summed up as follows :

1. To increase the strength of the the internal organs proportionately with the increase in the external muscular and body power. It has been found that a number of prize-winners have at times un-developed lungs and heart capacity or inefficient internal organs which account for their premature death. Real health is the health of the many and delicate internal organs. The Yoga physical culture lays emphasis on this.
2. Cleanliness may be both within and without. The baths therefore are not limited only to the surface skin e.g. sunbaths, steam baths, showerbaths, airbaths and what not ; but to the oxygenation and irrigation of the many vital organs within the body e.g. the nasal cleaning, the stomach cleansing, the irrigation of the alimentary canal and the sexual organs etc.
3. All the Yoga exercises aim at nervous control rather than muscular show and as such urge towards poise and control of the body and mind through the non-violent and non-fatiguing type of physical gymnastics.
4. The course includes scrupulous care of the whole body which means that every part of the body even to the smallest ductless gland receives proper attention daily. The object, most certainly, is to see not how much strain our strength can stand, but how really great we can make that strength.

For healthful living of an ideal type no better system of physical culture was ever investigated than the great science of the ancient Yogins whose secret technique of the various processes is now available to us and which could be profitably incorporated in the daily hygienic duties of an individual.*

MUSIC AND HEALTH

BY

DR. EDWARD PODOLSKY, M.D.,

Brooklyn, New York.

The first observations of the influence of music on the human body were made very early in recorded history, and perhaps the very first written observation is that occurring in the oldest of all Egyptian medical papyri discovered at Kahum by Petrie, in 1889, dating back to 2500 B.C. This contains an incantation in music which purported to influence the fertility of women favourably. Somewhat later Homer recorded the fact that it was music alone of all other therapeutic agencies which stopped the hemorrhage in Ulysses. In Biblical times the case of Saul whose sorely tried spirit was becalmed by the playing of David is well known. " When the evil spirit from God was upon Saul, then David took a harp and played with his hands. So Saul was refreshed and was well, and the evil spirit departed from him.'.

This remarkable power of music in soothing the troubled mind and elevating the spiritual qualities of man was remarked by Polybius, who speaking of a musical race of Arcadia, contrasted the gentleness of their manners with the cruelty of the Cynetes, who neglected the cultivation of music. Similarly, Greek historians tell us that Clytemnestra was stayed from vicious inclination to unchastity by the sound of music. Terpander restored a rebellious people to their allegiance through his melodies, and Tyrtaeus, the Spartan, by certain verses which he sang to the accompaniment of flutes so inflamed the courage of his countrymen, that they achieved a great victory over the Messenians, to whom they had submitted several previous conflicts.

Plutarch, in his life of Solon, related that the celebrated legislator excited the Athenians to invade and recover the Isle of Salamis, by singing an elegy of his own composition. Empedocles is said to have prevented the murder of his father by the music of his lyre, and the fierceness of Achilles was allayed by playing on the harp, on which account Homer gave him nothing out of the spoils of Eetion. Damon, with the same instrument, quieted wild youths, mad with drink ; and Asclepiades, in a similar manner, brought back seditious multitides to temper and reason. Zenocrates, Sarpander and

* To those who are interested in health and hygiene, we strongly commend the remarkable work on Yoga by this learned author entitled Yoga Personal Hygiene. It contains everything practical that one would care to know about Yoga, fully illustrated and scientifically analyzed. Price Rs. 10. Also available from us.—Ed.

Arion, among others, employed music to curb the maniacal outbursts of madmen. Celsus pointed out different methods of influencing the minds of the insane, depending on the nature of their mania. "We must quiet their demoniacal laughter by reprimands and threats, and soothe their sadness by harmony, the sound of cymbals and other instruments." Using music in quite a different manner, Antigenides, the tibicinist, played before Alexander the Great, and so inflamed him, that, leaping from his seat, and drawing his sword, he, in a frenzy of courage, assailed those who were about him. Aristoxenes, thinking of music in a more benevolent mood, advocated its introduction at meals, inasmuch, as he said, its sublime symmetry restrained mental and physical excess.

Music in its more curative aspects was employed from very early times. It is certain for instance, that the Thebans used the flute for the cure of many distempers, which Galen called: "*Super loco affecto tibia cavere.*" Martinus assures us that he was successful in removing fevers by song, and that Esculapias cured deafness by the sound of the trumpet. Aulus Gellius is authority for the statement that a case of sciatica was cured by gentle modulations, and the Phyrgian pipe was generally recommended by several of the ancient philosophers as an antidote to sciatica.

Theophrastus, in his essay on *Enthusiasm*, maintained that the bites of serpents and other venomous reptiles were relieved by music, and again Plutarch is authority for the statement that Thelates, the Cretan, delivered the Lacedaemonians from pestilence by the sweetness of his lyre. Similarly Democrates asserted that the sound of the flute was a remedy against the plague. The status of music in ancient times as a beneficial influence was rather firmly established.

As time went on the remarkable powers of music received even greater and more careful attention. Its widespread influence of mind and body has been noticed and appreciated by even the most casual observers. Thus Napoleon, after his defeat in Russia, is alleged to have declared it was caused by the Russian winter and the Russian army music; the weird barbaric tunes of "those monstrous Cossack regiments" inciting the Muscovites to those furious attacks in which they wiped out the best regiments of the French army. How many similar incidents where music played a deciding factor in victory have never been recorded, but they may have been many.

In a quite similar manner in which Alexander the Great was incited to courage, it is related that Claude le Jeune, the favorite musician of Henry III, once caused a spirited air to be sung at a wedding, "which so animated a gentleman who was present that he clapped his hands on his sword and swore that it was impossible for him to refrain from fighting with the first person he met; upon which Claude caused another air to be performed, of a soothing kind, which immediately restored him to his natural temperament."

Some people are influenced to a greater extent by music than others. An interesting case of this sort is recorded by Chomet. A young musician of

Province was so swayed by the assionate strains of the music in the opera *La vestale* by Spontini that he went again to hear the opera. He was so completely fascinated for the second time that he thought that he has reached the maximum of happiness reserved for man on earth, and not caring to live any longer, blew out his brains on leaving the opera house. Eastcott is authority for the story of a certain gentleman residing in Devonshire, England, in the early part of the last century was so affected on hearing a trio of Lampugnani's, fell into a fainting fit, which entirely deprived him of speech and memory for more than an hour. Music had generally this effect on him, but he was so fond of it, that he could not resist the temptation of hearing it, despite the strange effects it had upon him. Some time after this he was in London, when he went to witness Doctor Arne's opera *Artaxerxes*. He stood over the orchestra during the overture with some difficulty, but the first song overcame him, and he fell senseless over the back of his seat.

A very interesting case where an individual, knowing of the strange power music had over his fellow-beings, used it for practical purposes, was Fillipe Palma, the singer, who had the unfortunate faculty of forever falling into debt. For this reason his house was continually besieged by creditors. One day an enraged creditor burst into Palma's house, and the singer was not long in realizing that no soft words of his would allay the man's anger. He thereupon hit upon the idea of utilizing the more certain powers of music. Accordingly he sat down at the harpsichord and began to play so soothing a melody that the enraged creditor was slowly pacified. It is said, moreover, that not only did he free Palma from his obligation of paying his debt, but that he also provided him with money to pay off his other creditors.

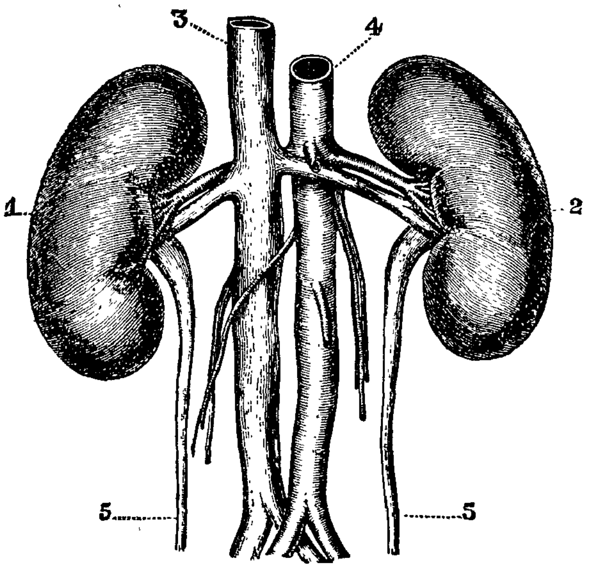
A story in the same vein as the foregoing one is told of Sultan Amurath, who having laid seige to Bagdad and taken it, gave orders for putting to death some thirty thousand Persians notwithstanding the fact that they had submitted and laid down their arms. Among the number of these unfortunate victims was a musician. He besought the officer who had the command to see the sultan's order executed to spare him but for a moment, while he might be permitted to speak to the emperor. The officer granted him this favour; and being brought before the sultan he was permitted to exhibit a specimen of his art. The pathetic tones and exulting sounds which he drew from his instrument is said to have brought the sultan around to his better nature, and as a result of this he gave up his intention for a wholesale massacre of the Persians.

Therapeutic applications of music were made, as stated before, in quite a few abnormal conditions. In more modern times this was even more taken advantage of. Some two hundred years ago Bruckmann and Hufeland reported cases of St., Vitus dance, cured by music. Desessarts also recorded that catalepsy was cured in a like manner. Schneider and Becker ascertained its influence in hysterical and hypochondriac affections. Burette was of the opinion that sciatica could be relieved

and even cured by music. So widespread was the enthusiasm for music-therapy during the 17th century that a pretentious work appeared, entitled *Magis Universalis Natureest Artis* which contained bars of music that were reputed to cure persons bitten by a tarantula. As a matter of fact, the effectiveness of music in curing tarantula bites was further affirmed by Mead in England, Burette in France, and Baglivi in Italy. Their explanation of this phenomenon, which is quite reasonable, is that music throws the patient into a violent fit of dancing, which by bringing on profuse perspiration, effects the cure.

Among the oldest records of the Academy of Science at Paris the case is mentioned of an illustrious musician and composer who was attacked by continuous delerium. On the third day of his delerious fever he asked if he might hear a little concert in his own room. Bernier's *Cantata* was sung. As soon as he heard the first notes, his countenance became calm, his eyes assumed a quiet expression and the convulsions ceased altogether. As soon as the music ceased he relapsed into his former condition. After ten trials of the same treatment a complete cure was effected,

The almost similar case of Philip V, of Spain, is even more famous. He suffered severely from melancholia, which nearly ended in madness. Court physicians' skill being exerted in vain, Farinelli, the famous castrato soprano and a former favorite of the unhappy monarch, was sent for as a last resort. Being placed in an adjoining room to that in which the unhappy Philip sat in brooding melancholy solitude, he sang several joyous melodies. No result was perceptible on the first day; but the experiment being repeated, new songs being sung, and the hours of the audience extended, the king showed symptoms of reviving attention. He listened and gradually became absorbed in the exquisite solo concerts. His interest grew daily; he become discriminating, and his attention being thoroughly aroused his cure became rapid and permanent. (*To be continued,*)



Kidneys.

EMEMIES OF HEALTH

BY

PROFESSOR K. B. MADHAVA, M.A., F.R.A.S., A.I.A. (Lond.)

Mysore University.

Of course there are several enemies of health. The medical researcher interests himself with microbes, germs, mosquitoes and flies amongst such enemies. The temperance workers generally select alcohol, opium and sometimes tobacco also, in their campaign. The lay public are seized with tea, coffee and other stimulants. It is probably open to one who like me lives, moves and has his being amidst University students, to observe such common and unfortunately daily growing habits amongst them as may also be reckoned enemies of health.

The young students' partiality for fried peanuts, highly spiced gramdhal, pepper, chillies, pickles, vinegar, and in particular condiments and spices of his own native tastes is common—so common indeed that parents and wardens do not find it incumbent on them to advise properly and alter that habit. I do not know how many have noted the following utterance of Gandhiji but I know certainly that the kitchens in the Victoria Hostel, with reference to which it was that the utterance was made at Madras on the 16th February, 1917, have not heeded the salutary advice. Said he: "I am just now coming after having inspected the Victoria Hostel. I saw there, not to my dismay though it should be to my dismay, but I am used to it now, that there are so many kitchens, not kitchens that are established in order to serve caste restrictions, but kitchens that have become necessary in order that people can have the condiments, and the exact weight of the condiments, to which they are used in the respective places from which they have come. And therefore we find that for the Brahmins themselves there are different compartments and different kitchens catering for the delicate tastes of all these different groups. I suggest to you that it is simply slavery to the palate, rather than mastery over it. ...." What is wrong with these spices is that they irritate the lining membrane of the stomach and the appetite for liquor is encouraged, and further, the animal propensities are aroused while the moral and intellectual powers are weakened and become servants of the baser passions.

Of tobacco I do not propose to say much, not because the students are not addicted—far from it, they are too deeply engulfed in it to be reclaimed—but persons much better qualified than myself have unhesitatingly condemned its use. Ruskin whom the students delight in to read and admire (but not to follow) has said that "tobacco is the worst national curse of civilisation". Students who revel in chemical analysis may discover that tobacco contains such powerful poisons as nicotine, pyridine, picoline, collodin, ammonia, marsh gas, furfural, cyanogen, carbolic acid, hydrocyanic acid and even prussic acid and a number of other harmful agents. Students of history may recall that

James I and Charles I issued proclamations with a view to suppress the habit which Sir Walter Raeleigh and Sir Thomas Roe unwittingly encouraged, and the Russian and Turkish rulers cut off the noses of the smoking people. Thomas Edison is said to have written to Henry Ford: "Friend Ford, The injurious agent in cigarettes comes primarily from the burning paper wrapper. The substance thereby formed is called acrolein. It has a violent action on the nerve centres, producing degeneration of the cells of the brain which is rapid among boys. Unlike most narcotics this degeneration is permanent and uncontrollable. I employ no person who smokes cigarettes". Here is also a cure against unemployment, but it is a pity that the student who is supposed to be pursuing knowledge in the University is prone to divorce precept from practice.

I am inclined to think that betel chewing is a great curse that has overtaken the young student. Indeed it is more than a curse because there are some who honestly believe, (*a*) that it is a cure against dyspepsia and constipation, and (*b*) that it is encouraged by Hindu Shastraic habits. I understand that medical authorities are agreed that piperine, arecadine, imbalance of lime, 'stain', 'hinder digestion', 'worsen constipation', 'deaden the intellect' 'turn hair grey at an early age' and what not. Even Hindu Ayurvedic Shastras seem to contain slokas to the following meaning:

> If betel is taken in large quantities, the strength of the body, eyes, hair, teeth, ears decreases;
>
> Pan is forbidden in fever, dryness of the mouth, haematemesis, persons subject to fainting, to eye troubles, and for peevish and weak people.

As for Hindu Shastras permitting the use of Pan, Mr. L. G. Mukerjee to whose book I am indebted in the preparation of this article quotes a sloka from Brahma Purana which gives the lie direct to such an assertion, & which means "To the widow, saint, one leading the life of celibacy, the ascetic, pan is like the flesh of a cow".

I must certainly say that the drug habit and the growing use of patent medicines is the worst among the enemies of health which have overtaken the young generation of students. It is the worst because they are resorted to in the honest belief that they "cure" diseases. It is not so—"drugs do not cure diseases; they change the symptoms, and transfer the location of the disease". All "cures" against headache, other pains, constipation, gonorrhea, anemia are, to say the least, moonshine. The market is studded with such "talismans". Sir William Osler, whose well known textbook on the "Practice of Medicine" is used by so many medical students, says "the best doctor is he who has learned the worthlessness of most drugs". Pure air, sunlight, use of water, exercise, rest, abstemiousness, perfect diet, scientific massage, electricity are more rational methods which the enlightened and enlightenment seeking students must resort to.

Great efforts are made to stamp out enemies of health, but I would rather wish that these growing evils—irritant food, tobacco, betel chewing, drugs and patent medicines—leading to the increased degeneracy of generations of young men are combated effectively.

MENTAL DEFECTIVES AND WHAT TO DO WITH THEM

BY

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Mental defectives so-called, are those persons who are born with a lowered potentiality for mental development or whose powers for such development are lowered in early age by accident or disease. They are therefore rendered incapable of holding their own with persons of the same age, education or status in life. It is unfortunate that the term "defective" is applied to these people. It is not the defect *per se* that calls for our attention, because any person, however highly cultured he may be, may have defect of some sort and despite it, may go through life successfully. No one could be said to be perfect either physically or mentally. The unfortunate individuals whom we call defectives are generally handicapped and are incapable of competing with persons of the same social status as themselves.

No exact statistics are available, as regards the number of mental defectives among the people of India. The English Royal Commission of 1904 which investigated thoroughly the incidence of mental deficiency in the United Kingdom found that 3·8 to 5 per thousand of the population was defective with a slight preponderance of males over females. As an outcome of this investigation, the Mental Deficiency Act of 1913 was passed and which provided for the care and supervision of these subjects, for the maintenance of institutions for their detention and, for the education of defective children, apart from normal children.

Considering the low standard of life in this country, the incidence of mental defect must be much higher than in England.

The developments in modern psychology have made it possible to detect mental defect, given in its mildest form, to classify the defectives according to the degree of defect and to devise ways and means for training them according to individual mental capacity.

Left to themselves, these persons may be considered to be an economic drain on the country and a social menace. One mental defective in a family hampers the orderly progress of the other children and out-of-doors these helpless beings are easily exploited by intelligent criminals and used as tools to perpetrate many criminal acts. So any comprehensive scheme for the custody, care and training of these people, will conduce to the welfare of the community and should be a matter for serious consideration in every progressive administration. To convert them from social liabilities into social assets will be an economical gain. But public opinion on this point, is woefully lacking in this country and the result is, misery to many families, increase of delinquency and immorality in other forms.

The prevailing opinion about the cause of mental defect is that it is

hereditary. This is partly true. Cases are not infrequent where mentally defective children are found in families with no hereditary taint. Physical illness affecting one or both parents, illness of the mother during pregnancy may affect a child's mentality. Post-natal conditions such as convulsions and injuries to the head are commonly known to result in mental defect. Mere lack of nutrition is not uncommon as a causative factor. When hygiene of pregnancy is neglected, when primitive methods of child birth still prevail, when children are ill-fed and when parents suffer from tuberculosis and syphilis, one cannot but wonder at the large number of mental defectives. It is useful to remember that there is no hard and fast line between normality and defect. The transition from one to the other is gradual and careful mental testing would reveal mild degree of defect in some who are apparently normal. When such defect is revealed, the fact should not be suppressed by sensitive parents, in order to safeguard family prestige and thus to sacrifice the child's future interests.

The social aspect of mental defect is that the person concerned is incapable of maintaining his existence without external support or supervision. Another point worth-noting is that they are not able to compete with fellows of their own age and similar circumstances in life. In other words, they are not educable along with average children. These two points viz supervision and education give the clue to the whole idea of the management of these cases.

Homes and institutions for the defectives are conspicuous by their absence in India, and the prevailing practice of sending them to the mental hospitals and mixing them with lunatics cannot be too strongly deprecated. Special state-aided institutions for mental defectives are very necessary. Such institutions should be provided, before legislating for the compulsory segregation of defectives and their education along special lines.

In addition to special institutions at certain centres, special schools should be started for their benefit where training is given according to individual capacity to learn. Needless to say that this training is more vocational than literary, the object being to develop whatever latent capacity the child may possess. To send such children to ordinary schools, as is often the case now, is worse than useless. It handicaps the child and taxes the resources and the patience of the teacher and indirectly interferes with the proper training of the normal children. It moreover lowers selfrespect of the child and brands him as a dullard.

Persons, whose philanthropy flows freely in the direction of endowing Colleges and Universities to turn-out graduates, would be well-advised to divert their attention to this much-needed social measure. Is it a profitable investment ? Protection and cure of individuals who are otherwise a burden on society, certainly tends towards general welfare. Reclamation of persons who would otherwise swell the ranks of criminals makes for the greater safety of the public. Utilisation of whatever latent powers the defectives possess would convert them

from an economic drain into an asset. Viewed from anypoint, the measures that are undertaken on behalf of these unfortunate fellow beings are both salutary and profitable.

A new idea has been propounded within recent years, with regard to the defectives and which on account of its novelty has caught the imagination of the public. This is the so-called "sterilisation of the defectives" in order to prevent the propagation of their kind. From what is known as to the causation of mental defect this measure is of doubtful value. Suffice it to say that a Committee of the British Medical Association which investigated this subject, has strongly pronounced against this measure and their opinion is entitled to due respect.

VILLAGE SANITATION.

BY

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Mr. Donald J. Beaton, an Engineer, 'has made a sweeping exposure of what Science has done for Indian Agriculture and its rural population and he depicts scenes in Indian villages now which are as old as man himself and certainly the same that were 10,000 or 5000 years ago'. The same may truly be said of village sanitation in India. In most parts of India, in the villages, sanitation now, inspite of science and civilisation, is in the same condition as it was in prehistoric times.

Taking sanitation in its broad sense it deals mainly with Housing, Food, Water, and Conservancy. Most of the village houses, specially of the poor classes are one-room houses where the family cook and eat their food, keep all their worldly possessions, store grain and fuel and sleep. Animals also, are tied and kept in the same room at night. If there is any opening or window in the wall, it is usually closed and packages or other articles are put in there. There are no special precautions taken in the village about avoiding contamination of water and food and about conservancy, the less said the better. Disposal of night-soil and dry rubbish there is none. Fields round about the village and paths and spaces between houses are used indiscriminately for attending to nature's calls and rubbish and refuse are dumped down anywhere outside the house. Cattle excreta are also added to these. Dunghills and dump-heaps are a regular feature in most Indian villages. No organised attempt is made for the disposal of night-soil or rubbish. Sunshine, pigs and other animals are the great agents in dealing with night-soil, the one drying it up and the others eating it. Crows and vultures are also useful and form a good second line of defence.

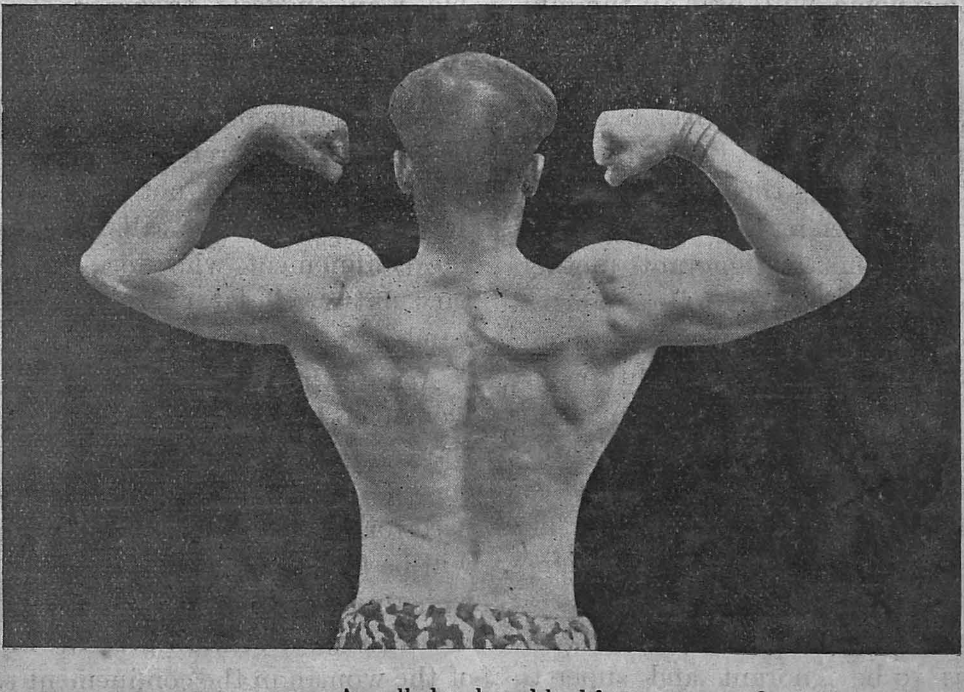
The three great essential factors in sanitation for preservation of health are:—

1. Avoid promiscuous contamination of the soil.
2. Ensure clean water supply.

3. Prevent being bitten by insects by destroying their breeding places or by other means.

One can see that in villages these are not attended to and not the least cared for. Conditions in these matters are the same as existed thousands of years ago. The Public Health Department has not been able to tackle this problem, though much has been done in towns and cities. Indeed it is a very difficult problem. Some constructive work in this direction has been done by the rural uplift and rural reconstruction workers. This necessarily has been one of the chief problems in rural welfare work.

The Pit System, has been introduced for human excreta. In these pits night-soil is collected and later on used as a valuable manure. How far these systems will work and how long they will be continued depends on the energy and zeal of the workers. Village Panchayats have been formed and some good is bound to be done. But to keep up the continuity of the system and to get results commensurate with the trouble and expense devoted to the rural welfare work, this kind of spoon-feeding business will not do. The masses, the villagers themselves, must realise what is good for them and practise it in sanitary as well as in other matters. For this a sanitary conscience and a civic consciousness must be created in them. And this cannot be done by only forcing things on them. It must come from within and for this the chief essential is education and compulsory education and under Indian conditions amongst women first. That is the bottom-rock or basic foundation of all orderly progress and happiness. Without that, though temporary good results may be seen, no solid or permanent good will be achieved.



A well developed body.

POVERTY OR IGNORANCE, WHICH IS WORSE?

BY

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There is appalling poverty and colossal ignorance in India, and I should like to ask myself which is worse from the point of health. Ignorance is followed in its train by superstition and they between themselves cause a lot of unnecessary human suffering and waste of money which can surely be avoided by people who are educated though poor. Latterly our elders are gradually getting alive to the importance of dispelling ignorance from the masses. This ignorance is specially great among our women who rule the hearth and home, and in proportion to the education of the women, the home is free from disease and superstition. If the husband is educated and the wife is not, the home will bear all the influence of the wife. However highly educated the husband is, it is the wife that rules the home. This has been true ever since Adam and Eve. Inspite of educated fathers, their daughters are married at a tender age at the constant urge from the ignorant mothers who are very keen to follow conventions. The frequent persuasions and advice from fathers to the contrary are set at naught. Again in the marriage all the pomp and ceremonials and other expenditures must be incurred by the husband, if the wife desires them. The husband is in 99 cases powerless before her. So socially the woman is a great factor in every family and if she happens to be ignorant and superstitious, a lot of unnecessary expense and worry is the rule.

As this article is meant for 'Health,' I want to show how such a woman is a source of avoidable unhappiness and suffering in the family. The pity of it is that she does all this with the best of intentions. How ignorance affects the family medically, I show in a few lines.

On my side and probably everywhere in India in small towns and villages though there may be a capable nurse, the chief woman of the house will bring in a *dai* for confinement, however ignorant she may be, but she will not bring in a trained nurse though available. If her husband or a sensible man suggests to her to bring a trained nurse, she puts forward the plausible plea that she herself was confined in the old fashion without any harm and she therefore sees no reason why others should not be done in a similar way. So she calls in a *dai* for the confinement who does the necessary duty without even washing her hands.

Again the clothes given to the woman to be confined are dirty ones as they are to be thrown away afterwards. In some cases only a mattress is alone used for her till the tenth day when she will be free from all impurities. The woman is left solely in charge of the *dai* who does not allow even the mother of the woman in the confinement room.

In other words, the life of the woman to be confined is handed over to the tender mercy of the *dai*. As a result of the manipulations of the *dai* by her dirty hands and also by the dirty clothes on which the woman lies, she gets septic or sapraemic which in turn is followed by death or long illness. Surely all this suffering and misery can be avoided. Men in the house have no voice in the whole affair. They are only called in to send for the doctor probably at the eleventh hour or the delivery is a very protracted one or when a hand prolapses. Many cases are thus lost by postpartum haemorrhage or placenta praevia. The *dai* first minimises the haemorrhage and when the woman is on the verge of collapse, she asks the male member of the house to call in a doctor who comes late on the scene.

The infantile tetanus which is so common in the villages and towns and which has such a great death rate is an easily preventable disease. It is solely due to the faulty cutting of the cord. If the cord is only cut by a sterilised (boiled) knife and some antiseptic powder put on it, no death would ever occur. Our hospital cases amply bear out this fact. Instead, these women spend much money in propitiating the deity on the sixth day of confinement to avoid the disease, and in many cases the money spent in propitiating is money wasted. It is the ignorance on the part of our women that is responsible for this mortality and waste of money. In this connection I should like to mention a funny tradition in a family. The deity is to be worshipped on the sixth day of the confinement and then she is to be kicked; the cause of this is very interesting. In that family at one time all the children born used to die of the disease inspite of worshipping the deity. So the husband got angry. He in anger kicked the deity who was worshipped and that very child survived. So, to this day, in that family the deity is to be worshipped and then kicked. Superstition has such a hold on ignorant women.

In diarrhoea and dysentery, water is not given to drink. The child cries for water as it is so very necessary to replace that which is lost in constant purging but the mother denies the child the water. There is so much suffering on the part of the child and the mother too and all this is done as part of the treatment for the disease. Again if the infant is only vaccinated at an early age, all the sufferings of the child subsequent to the disease and the disfigurement of the face that follows will be avoided. Also worry, misery and expense that will have to be incurred if the child gets the disease can be averted. But the vaccination is delayed owing to the ignorance of the mother with all the consequences mentioned above in all those places where it is not compulsory. I have shown sufficiently the consequences that follows ignorance. Now, I should like to take the instance of a poor but educated woman. If she is educated, her house would be clean, neat and orderly and it will surely be a pleasure to enter such a house. She will take advantage of the hospital or maternity home instead of being confined at home by a *dai*. She will return to look after her home and children in about 15 days. Her child will always be a living child. If

her children get ill, she will give the right treatment and will not fall a prey to superstition and unnecessary expense. She will get her child vaccinated at the right time and will avoid the subsequent suffering of the child and worry and expense to herself and her husband. Thus she will make the hearth and home cheerful and happy. Whenever she hears of an epidemic in the town or in the vicinity, she will take proper precautions to avoid it, and if by chance her children are attacked, she will do all the needful in the proper way.

I think I have sufficiently shown above that in these days of poverty and ignorance in India, it is the education that is badly required and that too to our women. The more the education of the right kind spreads among our women, the more will the hearth and home though poor be made happy and the poverty can be cheerfully borne.

CARE OF THE EXPECTANT MOTHER.

BY

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The highest law of biology viz. "The preservation of the species" is the natural desire of all animals, and to achieve this it is necessary that the youngster should be reproduced in such a condition that it is able to stand the struggle for the survival of the fittest. The lower animals depend for this entirely on their instincts, but man a rational being supplements this with the aids that he has acquired as a result of scientific studies, and the accumulated experience of generations. Now we all know that for the proper growth of the plant the seed is as important as the soil, and it is with the preparation and care of the latter—the mother of the future child—that I shall deal in this article.

For a healthy offspring it is desirable that the couple should be physically fit and cheerful at the time the conception takes place. After this the woman is the all important factor so far as the interest of the child is concerned and so I shall describe in some detail how to take care of the expectant mother so that a healthy child may reasonably be expected, and the mother, the means of sustenance of the child in the early part of its life, also remains healthy.

When conception takes place, which the woman knows by the cessation of the otherwise regular monthly discharge called menstruation, she should be thoroughly examined by a competent doctor, preferably by a female member of the profession, as the woman is less embarrassed when seen by one of her own sex. In this examination in addition to a thorough overhauling of the systems in general.—

The Urine must be very carefully examined for the presence of Albumin casts or any other abnormality. The importance of this lies in the fact that any minor defects in her urinary functions which she can put up with ordinarily are liable to be exaggerated

by the extra strain thrown upon the kidneys, in excreting the products of her own metabolism and those of the foetus, and this additional work might result in the breakdown of this important emunctory, and lead on to grave complications in the form of Toxaemias of pregnancy and Eclampsia, from which many a valuable life has been lost. If these minor defects are detected in the first examination, special precautions will have to be taken. After this first examination, the urine should be tested periodically and the frequency of such examinations increased as the pregnancy advances till towards the end of the period weekly examinations are done.

Measurements of the *pelvis* especially at the first pregnancy or if there was any difficulty in the previous delivery, are to be taken, to make sure that the maternal passages are sufficiently wide to allow of the birth of the fully grown foetus. Neglect on this point has shattered the hopes of many a mother, who after cheerfully bearing all the troubles and inconveniences for full nine months in the hope of a baby come to term, the labour is unduly prolonged, and in all probability several examinations and manipulations done with doubtful aseptic precautions and ultimately it is found out that the pelvis is so contracted that birth by the natural passage is impossible. Alas! it is then too late for a Caesarian section as well, and the only recource left is the heinous operation of cutting off and crushing the child's head inside the womb before it can be delivered, and this naturally increases the chances of sepsis to the mother. One can readily gauge the feelings of the mother and her relations in such cases not to mention those of the attending doctor, for a little care in the beginning might have averted this catastrophe.

Diet during pregnancy is the next important thing to be considered. In India where happily the vast majority of people are vegetarians the consideration of meat diet does not come in, but even for those who take meat, it is advisable to use it sparingly. The most suitable diet is a carbohydrate (starch and sugar) diet with plenty of green vegetables, fruits,and an adequate supply of milk and milk-preparations rich in vitamines. The importance of these is that they are not only essential for life, but for the successful termination of the pregnancy they are vitally necessary. Recent research has conclusively proved that a deficiency of what is named the fat soluble "E" leads to abortion, and in fact many cases of miscarriages, premature deliveries and even sterility in women for which no cause can be found, are due to a deficiency of this accessory food factor. Again for the proper growth of the bony structures of the foetus, the calcium metabolism of the mother must be at a high standard of efficiency, otherwise the child is likely to be puny nay even rickety. The calcium metabolism of the individual is regulated by a vitamin named the fat soluble "D", and as natural fats like cod liver oil and fresh butter are rich in these components their importance in the dietaries of the pregnant woman cannot be over emphasised. Plentiful supply of plain water is also of prime importance, as it increases the quantity of urine and thus spares

the kidneys of having to excrete waste products in a concentrated form to their detriment. Knowing what articles of diet are suitable, we must utilise this knowledge in the best possible way, because owing to nausea, vomiting, and loss of appetite it is sometimes very difficult to make the woman take sufficient nourishment, or retain and assimilate it; here a little tact and ingenuity might prove helpful, for instance for the morning sickness of early pregnancy a cup of hot milk or cocoa with plenty of sugar if given while she is in bed and lies down for sometime afterwards, obviates this to a large extent; but for the vomiting that persists or comes on after the fourth month, it is best to consult a physician as this is liable to be more dangerous, here too small feeds at frequent intervals given in a concentrated form might be retained and thus help to maintain her strength. One word of warning here will not be out of place, that any headache in a pregnant woman is to be looked upon with suspicion as this may be an early symptom of grave complications, the advice of a physician sought for at once and pending that, all food and drink except water and perhaps a little fruit juice are to be withheld.

Bowels—are to be regulated in such a way that daily evacuations are secured, and as the woman is generally constipated during pregnancy, some such bland laxative like liquid paraffin with agar agar or cascara may be used regularly.

Clothing:—The important point is that all tight garments are to be avoided, and it should be light and suitable for the weather and according to the taste and habit of the individual.

Bath & Massage:—The woman should take baths regularly and if possible every day. She may use tepid or cold water as she likes, provided care is taken to avoid chills, especially when warm baths are taken. Massaging the body with oil is very much appreciated by her and is indeed helpful if sufficient care is taken to remove the excess of oil. The use of soap and warm water will help to keep the skin pores open and promote perspiration, so its use is to be encouraged.

If there is any discharge from the genitals, gentle vaginal douches can be taken, but very hot water or strong antiseptics are to be avoided.

Rest & Exercise:—It is needless to say that the woman should have sufficient rest during the whole of this period, and preferably rest in bed for some time just before and after the principal meals. It is also important to see that she gets adequate amount of sleep in the night, and wakes up refreshed in the morning. During the later months it will be better if she were to lie with her feet raised on a pillow to facilitate the return of blood from the lower limbs and thus minimise any chances of their swelling which not uncommonly takes place.

It is a mistake to think, that because rest is advised she should take absolute rest in bed during the whole of the gestation period, on the contrary she should be encouraged to take gentle exercise like walking or attending to light house-hold work just short of producing fatigue, interrupted of course by periods of rest. Experience

has shown that those who keep on moving about till the end of the term deliver much more easily than those who stick to bed or are unavoidably confined there.

Breasts:—During the latter half of pregnancy the breasts require attention. There is a feeling of tenseness if not of actual pain especially in the primipara, and for this massaging them with some oil by gentle stroking movements towards the nipple gives great relief, at the same time the nipples are to be drawn out to make them fit for suckling. To prevent the cracking of the skin due to suckling, it is best to wash the nipples and areola with a little diluted Eau-de-Cologne or spirit. If the breasts are large and pendulous a support in the form of a suspensory bandage is very helpful.

Marital Intercourse:—It is best to stop all marital intercourse during pregnancy, if not it can be allowed only with the strictest moderation in every sense of the word, and that too only during the first half, in the second half she must enforce absolute abstention.

In a small compass I have tried to put before the readers the most important lines along which care is to be taken of the pregnant woman; but I think I shall be failing in my duty if I keep silent on two points that do not strictly speaking come under the heading of this article. I shall, therefore, take the liberty of saying a few words on them. The first is the room in which the woman is to be confined. It is a pity that the woman who is at that time performing the highest biological function is considered as unclean in our country, and as such the filthiest and the most insanitary room in the whole house, nay even a place in the cowshed is allotted to her for confinement, when, being in a weak state of health she requires the best hygienic surroundings for the quick recuperation of her health, not to speak of the newly born baby who is not strong enough to stand the vicious atmosphere without detriment to its health. I venture to suggest that the best room in the house, and if possible one with doors and windows on both sides but not too damp or exposed to draughts of air, be set aside for this. Again the charcoal fire that is always kept lighted in the room must be used judiciously, it should be lighted outside the room and when taken inside one should see that at least some of the windows are kept open, otherwise the poisonous gases emanating from it are likely to suffocate both the mother and the baby.

The second is the question of appointing the person who attends to the delivery. It pains me to see that even in very rich families where large sums of money are spent to celebrate the birth of the child the old fashioned barber-midwife is employed for the purpose. As every intelligent man knows, she is of very unclean habits, neither has she got the least idea of sepsis and asepsis, and is doing things in her own way. She is more often than not the real cause of septic fever, with all its complications even loss of life and the whole trail of miseries, and the ruination of the family that frequently follow it. I would, therefore exclaim—"Beware of the Barber-Midwife".

AUTO-INTOXICATION.

BY

SHRIMANT PANT SAHEB PRATINIDHI.

Chief of Aundh, Dt. Satara.

Autointoxication means poisoning or the state of being poisoned from toxic or poisonous substances produced within the body.

Autointoxication is known by other names, as self-poisoning, autotoxæmia, autotoxis, toxemia.

Autointoxication is generally caused by (i) wrong eating, (ii) overeating or gormandizing or (iii) by inhaling vitiated or impure air.

1. WRONG EATING.

By wrong eating is meant partaking of foods and drinks deficient in or deprived of constituents, like vitamins, essential to life by modern methods of milling or commercial refining or by unscientific cooking; or partaking of foods and drinks containing habit forming substances deleterious to health.

The following among others may be enumerated as "*Wrong*" foods and drinks:—white polished rice, white flour, leafy and other vegetables cooked to death in water with the remaining water thrown away, tea, coffee, alcoholic drinks, etc. Also wrong combination of foods comes under "Wrong" foods.

A glance at the ordinary diet of the middle and higher classes of our society will show that it consists mainly of (1) polished rice; (2) white flour; (3) whole wheat flour; (4) jwari, bajri or maize meal—[(2) (3) & (4) ground fine by high velocity power mills]; (5) pulses with their husks removed; (6) vegetables, made mushy by over cooking in water; (7) an abundance of refined cane-sugar, salt, chilly and other condiments in order to make the food savoury with appetizing taste or smell.

It is no wonder then that such a dietary should produce an endless variety of ailments, as a result of constipation and autointoxication.

In addition to this devitalized and denatured food, the modern civilized man and his blind imitator indulge freely in gastronomic pleasures, disastrous to health, as though not content with the harm already done by devitalized foods. He begins the day with a poisonous dose in the form of tea or coffee to wake him up. After break-fast, equally health-impairing, he smokes a cigar to settle his stomach and quiet his nerves. He finds an afternoon cup of tea to cure his after-dinner stupor. At night, as a necessary consequence of the infringement of natural health laws during the day, he needs an opiate to get to sleep and in the morning a cathartic to move his bowels.

Man is the only animal that spoils food before he eats it. He is the only creature that deliberately commits suicide by self-poisoning.

We may roughly divide foods into two main categories: Those which supply the body with fuel for the provision of heat and energy, and

those which build and repair the tissues of the body.

The former class includes the starchy foods, sugar and fats; and the latter, protein substances.

Most non-Brahman people believe that meat is the best source of protein and some of our present day Brahman leaders too are trying to force that belief on their fellow Brahmans. But by comparison of the vegetable protein foods with the animal proteins, the following averages are arrived at:—

Vegetable Protein—Average of twenty six of the principal foods such as wheat, sesame, beans, ground-nuts, lentils, etc., is about 26%.

Animal protein—Average of twenty-six of the principal foods, such as beef, steak, pork, mutton, chicken, turkey, salmon, etc., comes to about 22%.

This gives a difference of about 4% in favor of the *Vegetable Protein.* *

"The vegetable protein can do all that the animal protein can do and do it better, because it has no harmful germs like the animal protein and leaves no bad after—effects, as animal protein does. Animal protein swarms with billions of harmful germs and is a bacteria-former and carrier. Then, why appease a perverted appetite by eating that foul, germ-filled carrion?".

Low protein diets are better than high protein ones.

We are expatiating on the subject of meat at some length, because meat produces autointoxication and constipation, and because it is a popular belief that a man cannot be strong and courageous or do a good day's work without meat. But there is no scientific basis or experience for this belief, while there is abundant evidence to the contrary as pointed above. It is a belief based on tradition and misconception of the properties of meat.

Those who habitually eat meat foods generally suffer from autointoxication and constipation, which are the direct cause of more than 95% of diseases. Meat is mucus-forming and does great and lasting harm to the colon.

II. Over-eating.

Now as to over-eating i.e. eating without an appetite, we cannot do better than quoting from Bernarr Macfadden's Personal Message in "Physical Culture" for July 1932:—

Over-eating is the Road to Death.

"Disease and premature death have many sources, but the one great outstanding indirect cause is over-eating or eating without an appetite.

"Eating without appetite is one of the most serious dietetic sins.

"But if you are hungry, if every morsel of food tastes good and the digestive juices are liberally supplied, and the stomach and intestines are clean and wholesome throughout, you have a feeling of well-being. Life is pleasant.

"But if you have eaten a meal without appetite which lies an undigested mass in your stomach and intestines, you are automatically blue and melancholy. You feel mad at yourself and the world in general. It is this influence which creates our neurasthenics, the one cause at the back of autointoxication, which is really the fore-runner of all diseases.

* See "Vegetable Protein vs. Animal Protein" by G. W. Remsburg, D.C., N.D.

Do not eat without an appetite.

" If you can make that thought into a slogan and hold on to it every day of your life, you will greatly lengthen your years in this earthly domain. And you will not only add years to your life but better still you would add life to your years."

Most of us dig our grave with our teeth. The habit of gulping down great quantities of food without appetite, without mastication and even without enjoyment makes business for the undertaker. It is a serious blow to longevity.

III. Impure Air.

Now the last—but not the least—source of auto-intoxication is inhaling vitiated or impure air, the pernicious effects of which are too obvious to require discussion or elucidation.

IV. The Golden Rules of Health.

Good reader, you will naturally ask, " What to do to avoid autointoxication?" The anwer is, " Just observe the following simple rules." :—

(1). Never eat without a real appetite.

(2). Select food stuffs with a view to get sufficient vitamins, mineral salts and roughage. The surest and best source of vitamins is the use of " live " food. A large proportion of foods in common use are more or less " dead ".

(3). Make *whole*—meal products, unpolished rice, i.e., brown rice with only the woody outer hull of the paddy removed, dairy produce—as cow's milk, curds, butter-milk, butter, ghee—fresh fruit, nuts and raw green vegetables the staples of your dietary and ensure that they are prepared for the table in such a way as to preserve their *"live"* qualities. In other words eat natural foods, some cooked and some uncooked.

Avoid too many kinds of food at a meal.

(4). Avoid meats of all sorts, as they are unnatural foods and produce self-poisoning and constipation.

(5). All fried foods are best avoided.

(6). Taboo all stimulants and narcotics, as tea, coffee, cocoa, alcoholic drinks, tobacco etc.

(7). Never use irritating condiments like chilly, pepper, mustard, etc., because they contain no food.

(8). Use table salt very sparingly, because natural foods contain salt enough for the system. It is the devitalized foods and the perverted taste that necessitate the excessive use of salt.

(9). Use refined cane sugar very sparingly, because all cereals, milk, sweet fruits and nuts contain sugar most suited to and enough for the body.

(10). The meal hours should be regular.

(11). Eat leisurely, thoroughly masticating and enjoying each morsel.

(12). Two meals a day are quite enough for adults, with no snacks in between.

Swami Ramatirtha says, " If you want to injure your enemy, give him something to eat between meals."

(13). Drink pure water copiously, preferably between meals, not during meals.

(14). Sound sleep, peaceful mind, fresh open air, sunshine, daily bathing, brushing teeth every morning and after each meal, internal and external cleanliness are absolutely necessary to prevent auto-intoxication and for sound health.

(15). Secure two or three free bowel movements daily without straining—one in the early morning immediately after getting up from bed and one after each substantial meal. This should be quite normal on diets as described above, if all artificial stimulants, condiments, devitalized over-refined manufactured foods like white polished rice, white flour, etc. are strictly avoided.

(16). Proper bodily exercise should be done every day for 20 to 30 minutes in the open and sunshine if possible, particularly in a way which will improve and strengthen abdominal and pelvic muscles, spine, heart and lungs. The best exercise that will achieve these vital benefits as well as many more is the Namaskar Exercise. * It is an exercise that can be taken by everybody—young or old—in any season, in a room or in the open, without apparatus and without cost.

V. CONCLUSION.

If you, good reader, make it a religion to follow these rules in regard to diet and exercise, you will be ever free from autointoxication or any ailment and will be rewarded with superb health, vibrant energy, active efficiency and useful longevity.

I cannot conclude without quoting Dr. G. W. Remsburg, D.C., N.D., Drugless Physician and Dietitian of America, and Manu, our first ancient law-giver:—

"Many are looking for the pleasure of the hour and they think they can find it in eating what they like. They do not seem to know or realize that they will be punished for the remainder of the day and for life for transgressing the laws of food and health. Many are mis-informed; they are to be pitied; a few consider it unnecessary; they are unwise; a few consider it too much trouble to learn the right way; they are both unwise and lazy".—G. W. REMSBURG, D.C., N.D.

"When civilized men neglect the study of the Vedas; when they give up practices or rules enjoined by the Shastras; when they lead a lazy life-*i.e.* when they do not do proper exercise or active work; and when they are addicted to wrong eating or overeating, Death pounces upon them prematurely".—*Manu.*

ON THE USE OF COMMON SALT IN DIETARY.

" Common Salt taken into the system goes in as chloride of Sodium, and is excreted as chloride of sodium—the only effect being to thin the mucous membrane of the body and predispose to colds. The late Professor Lahmann of Leipzig gives it as his opinion in his book on 'Natural Hygiene' that the great amount of defective vision among civilized people of to-day is due to malnutrition through wrong diet and to the excessive use of common salt :—"*Good Health.*"

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* "Surya Namaskars", 3rd Edition, Enlarged and Improved. 200 Pages, 32 Full Page Illustrations and Illustrated Wall Chart, giving all the positions with directions. To be had of Diwansaheb, Aundh State, Aundh, Dt. Satara. Price including chart Rupee one only.

MALARIA CONTROL IN INDIA

BY

Major P. V. KARAMCHANDANI, M.B., B.S., M.R.C.P., F.R.S.T.M. & H., A.I.R.O., I.M.S.

KAUSALI.

EVERY educated man in India is familiar with Malaria, but there are very few people who realize the ravages wrought by this disease. Has it occurred to any lay man that the toll we pay to this disease in India alone, is over 10,00,000 per annum, that this disease kills more people in one year than the great war did in five, that malaria is the greatest single destroyer of the human race and is 'captain of the men of death,' and that one quarter of all sickness occurring in the warm climates is attributable to malaria ?. If this be so, why is it that so little notice of this illness is taken by the lay public who become seriously alarmed when a case of cholera or plague takes place ?. The reason for this apathy lies in the fact, that this disease usually lacks the dramatic nature of death which signifies such diseases as cholera and plague. Malaria sucks blood slowly and kills insidiously. But it is not only the mortality which should be the concern of any good Government. Morbidity is another important factor to be borne in mind, because if direct death rate due to this disease be estimated at an average of 1% afflicted, then 10,00,000 deaths during one year in India will be equal to 100,00,000 or one crore suffering from this scourge. Is not this a sorrowful state of affairs ?. Besides mortality and morbidity—meaning physical and mental suffering by the people —there is a third factor to be thought of and that is economic loss to the country in the form of loss of wage earning capacity due to disease, loss of revenue to the government due to death, hindrance to the economic development of the country due to both. Apart from the above considerations the effect of this disease must be considered from a fourth aspect and that is "expectation of life". Here I shall quote Col Christopher's address to the Fifth Science Congress in 1924 on "What disease costs India". "Now all men must die, but it is to be hoped that each will have a run for his money, so to speak, and live to a reasonable age, say 50 years. Let us see how many of the 360,000,000 of India enjoy this privilege. During the first year of life the expectation of life as given in the census for males is about 23 years. At the age of 5, it is 35 years, the highest expectation at any age. At 20 it is 27 years and at 50 about 14 years. The expectation of life in the females is not very different. How do these figures compare with those in European countries ?. The total death rate in Great Britain in 1911-15 was 13.8 per mille. The expectation of life in the first year of life for males was about 44 years and the expectation rose at the age of 3 to about 54 years, the highest point reached. At 20 it was 41 years and at 50, 19 years. We may say then that disease costs every one of the 360 millions living in the Indian Empire on the average a loss of 44—23 or 21 years expectation of life in the first

year of life and 54—35 or 19 years at the age of 3-5 years when the dangers of early infancy have already been passsed. Every young adult of 20 stands to lose 14 years expectation of of life and every man of 50, 5 years. It is true that at the age of 50 the difference does not sound very great, but whilst in England 530 of every 1000 persons born, reach this age, in India only 186 have done so, so that for every man of 50 in Indian population who expects to live 14 years, there should have been, had it not been for additional liability to disease, no less than 3 men each expecting to live 19 years." Now we know that the ravages of malaria fall most on the infant and children population, and because malaria is responsible—*directly or indirectly*—for the infantile mortality in India, it must be an important factor in the causation of shorter expectation of life in India. These are very serious problems well worth the consideration of not only the Government but also the enlightened Indians. 'In a country like India no single factor in its prosperity can be so important as the increase of locally grown food supply. Such increase is brought about by improved methods of agriculture and by bringing new areas under cultivation. In efforts to open up new areas of cultivation again disease may often be a factor determining success or reverse' (Christophers). Now as we know that it is the agricultural population which bears the greatest brunt of malaria, this affects the quantity of food produced, *i.e.*, the price of food.

The question which will be asked now is how to control malaria? Before we discuss this subject it is important that we should know the factors which bring about malaria. The cause of malaria is a parasite which lives and grows at the expense of the red matter in the human blood. This malarial parasite has two cycles of life which are termed (1) asexual (2) sexual. The former life which is a simple division of the parasite from one into many corresponding to the onset of intermittent febrile attack, is carried on within the human body, while the sexual life which is initiated by the differentiation of the parasite into a separate form at the time of acme of lowered resistance, is run into the body of the mosquito. Here the male and the female bodies meet and produce a *generation* of thousands of new rejuvenated parasites, each capable of carrying on a new asexual life when introduced into the blood of human beings and producing a herd of sexual forms ready to pass on into the mosquito when the latter rescues them by biting the man. Thus a circle is maintained where the role of the mosquito is intimately connected with man in spreading malaria. We can break the cycle by either (1) exterminating the mosquito (2) destroying the sexual parasites (3) (*a*) protecting ourselves against the bite of the mosquito, or (*b*) increasing our resistance so that even if bitten by the mosquito we do not develop malaria. It will now be clear that in control of malaria, all the three factors enumerated above are important. I shall deal with each separately.

(1) *The Mosquito.* Malaria is spread by certain species belonging to the genus *Anopheles.* They have spotted

wings, and when they sit their body projects at an angle from the surface, in contrast to another species *Culex*, the adult of which sits with a hunch back. They have four different stages in their development, viz., the egg, the larva, the pupa, and the imago or the adult. The female lays several hundreds of eggs at one time. These eggs are laid on the surface of water. In warm weather these eggs hatch out in larvae within a few days. The larvae are little wriggling bodies, active in movement, and when they rest at the surface, maintain absolutely a horizontal position, thus differing from the species called *culex*, larvae of which remain vertical. The next stage, the pupa, is a curved body resembling a cama, which is active in movement, but does not feed. The final stage, the adult, is moulted from pupa. In contrast to culex which prefers foul water, the anopheles breeds in clear water. The male having no biting apparatus cannot pierce skin and suck blood. The female alone being provided with biting mouth parts propagates malaria. The females are most active when the relative humidity is high. It is therefore that when rainfall is small, incidence is slight, and when in excess, fulminant malaria season follows. This is not so much due to the formation of breeding places as due to the creation of favourable conditions of atmospheric humidity, which bring about longevity of the female-a factor of first importance in the causation of malaria, beacuse the female takes a considerable time to be able to pass on the infection after it has fed on an infected person. I have explained above that the cycle going on in the body of the mosquito is sexual and this variety of reproduction takes some time (10-14 days under favourable circumstances). The female bites at night, being more voracious before sunrise and just after sun-set. During the day they take shelter in dark places protected from sunlight, cold and wind. The male is short-lived, while the female may carry over the winter hiding in warm damp sheltered places and remaining inactive throughout. Some species pass winter in ths egg-stage, others in the larval and these, even though thawed out of ice have subsequently been reared to adult stage. Similarly they survive the dry hot seasons by remaining inactive and hiding in suitable places. About half a mile represents the average flight of a mosquito. Malaria in cities is spread almost exclusively by one species, which selects wells and cisterns in which it breeds. In rural areas the problem is not so simple, because there are several different species, whose habits and breeding places differ greatly. Also the incidence of malaria in rural areas is largely dependent on climatic conditions. I have mentioned above how heavy rainfall inaugurates bad malarial season. It will now have been made clear that we can bring about extermination of the mosquito either during its aquatic stage or when it has grown into an adult. In the former case as far as possible no water should be allowed to stagnate. Filling hollows, draining and oiling swamps and pools where filling is not possible, are three important measures which can be directed against larvae of mosquitoes. Recently a chemical larvicide called Paris Green has been most successfully used in

place of oiling. Vegetable larvicides, larvicidal fishes, deterrent aquatic plants and biological control are other measures into which researches are being made. Measures against the adult mosquitoes include killing with swatters (a piece of wire gauze about 6" square fixed to a wooden handle); traps; fumigation with sulphur dioxide, smoke, waste tobacco etc., sprays such as flit, mosquil, kerosine etc., cultivation of alleged deterrent trees and plants like eucalyptus, nim, castor oil, papaya, lavender, cloves, pines, sunflower; and zoorophyalaxis *ie* animal prophylaxis.

(2) Destroying the sexual parasites. This was an intricate problem 5 years ago, because we had no remedy which could act on these bodies. Quinine even in large doses had little effect. Some workers even believed that quinine encouraged the formation of these forms in the human blood. With the discovery of plasmochin by the Germans, this problem has been solved. As I have said somewhere else (Bombay. Medical. Journal; April 1932), the quantity of plasmochin required to render a man non-infectious to mosquito is much less than that required to kill these sexual forms, in other words, infinitesimally small doses of plasmochin bring about such degenerative changes in these forms that eventhough they may be present in the human blood their property of reproduction in the body of the mosquito disappears. In my opinion plasmochin must be employed with quinine in the treatment of malaria, if reasonable prospect of success is to be expected.

(3) (a) Protection against the bites of the mosquito. Important measures employed for this purpose are nets and repellents. Regarding nets it is very important that they should be used properly, because if they are not hung inside the poles and not tucked well under the bed, or if they have a rent, they become traps in which the individual is bitten more severely by the entrapped mosquito. Mosquito nets employed should have the following requisites:—(1) 25/26 mesh woven 30/s. This means that the sum of the holes counted along a line of the warp and a line of the bobbin in one square inch is 25 or 26, and that cotton of which it is woven goes 30 times 840 yards to one lb. (2) Material of which it is made should be white to allow of easy detection of mosquitoes. (3) The top should be of netting and not calico as the latter excludes air. (4) If possible the net should be large and rectangular so that no part of the body can be pushed against it during sleep, and thus be bitten through it from outside.

The nets should be let down before dark in the evening, they should be stretched as tight as possible to allow thorough ventilation, before going to bed thorough search should be made for mosquitoes from inside, and the net should be put up in the morning by collecting the hanging portion together twisting it into a coil and throwing over the top bar of the frame.

(*b*) Repellents. These have but a limited use, because their effects wear off after a few hours. They act by obscuring the attractiveness of the human odour, and should be applied liberally specially about the neck and the wrists as sweating neutralizes their effect in shorter time. I have employ-

ed the following recipe for many years with considerable success.

Rx

Oil of Citronella.........$1\frac{1}{2}$ parts.
Liquid Parrafin.........1 part.
Cocoanut Oil...............2 parts.
Carbolic Acid............1%.

It is known by the name of "bamber oil" or "oleum Citronella" (*b*) Increasing the individual's resistance. This to a great extent depends upon the economic conditions of the people, which include improvement in general sanitation and increased facilities for medical treatment. More advanced countries than India have in the past, successfully combated this scourge by this means, of disappearance of disease from certain tracts in England which formerly were highly malarious. Even at present the commendable policy of "Bonificazione" by Mussolini in Italy in the form of drainage, filling and levelling Timber Delta; large intercepting canal and drainage in Pontine Marshes; silting at Crosseto; Polder system of reclamation in the Ferrara and Venice areas, and so many small bonifications, which aim at (1) improvement of agricultural conditions (2) reducing the prevalence of malaria, are living examples what combined effort of the people and the Government can achieve with such heavy odds of nature against them. This subject is too vast and outside the scope of a paper of the present sort.

As the things stand at present the only salvation for rural areas of India where 90% of malaria exists is in my opinion "Quinine cum Plasmochin". Until Malaria Survey of India finds out some better remedy, let quinine in the meanwhile penetrate the masses afflicted with malaria, let the Provincial Governments appoint touring medical officers to visit rural areas, and treat cases of malaria, and let some philanthropic people render help in this direction in place of building shivalyas and mosques.

WHAT ABOUT YOU?

You know the model of your car,
You know just what its powers are.
You treat it with a deal of care,
Nor tax it more than it will bear.
But as to Self—that's different;
Your mechanism may be bent,
Your carburetor gone to grass,
Your engine just a rusty mass.
Your wheels may wobble and your cogs
Be handed over to the dogs.
And you skip and skid and slide
Without a thought of things inside.
What fools, indeed, we mortals are,
To lavish care upon a car,
With ne'er a bit of time to see
About our own machinery.

—*John Kendrick Bangs. The Medical World.*

THE COMMON CAUSES OF DIARRHOEA.

BY

T. D. MUKHERJEE, M.B., D.P.H.

Burdwan.

Of the various physical ailments to which mankind is ordinarily susceptible Diarrhoea is the most common in our country. But it is a preventable disease as its origin is traceable in most cases to individual and personal hygiene. The disease is most prevalent during the rainy season when the subsoil water is uppermost. If sufficient care be taken the disease can be prevented. The disease causes much trouble and it would not be uninteresting and altogether useless to the readers if the various causes of the disease is briefly discussed shorn of details; they are :—

1. Overloading of the stomach especially with highly seasoned rich food or with indigestible food material. Bazar-prepared ready-made food articles having great chances of contamination and decomposed food.

2. Polluted water. Tank water polluted with various sorts of washings often contains the germs of diseases.

3. Ice, if packed with dirty matters and if handled by carrier of diseases. Ice-cream unless prepared with sufficient care may contain disease-producing microorganism.

4. Oysters, Shrimps. These animals generally live and thrive in sewage polluted water and may be contaminated with germs of disease-producing bacteria, and when taken not sufficiently boiled may cause various intestinal disorders.

5. Fruits and vegetables. Fruits picked up from soiled earth or when handled by dirty hand carry infection. Vegetables grown in land fertilized with fresh night soil and in trenching ground land are generally contaminated with fæcal bacillli. Radishes, guava, mangoes are the examples.

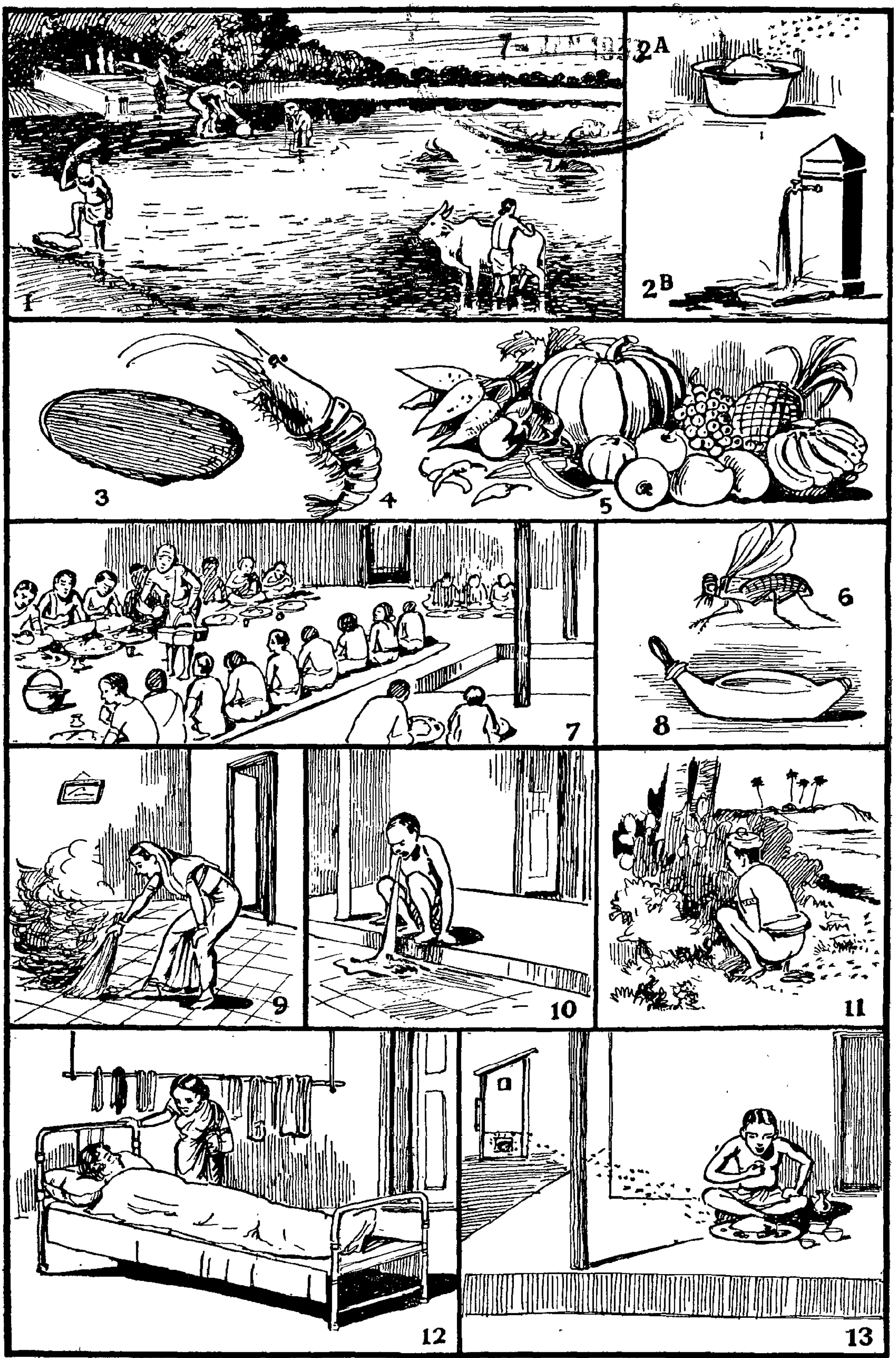
6. Flies. The dangerous pest of human beings. The common house fly (Musca Domestica) breeds generally on infective material, and when the imago comes out from its pupa, it may carry infection. Throughout its life the flies form a vicious circle as regards the spread of infection. They carry the infection from the excreta of a patient to the food of a person, who gets the disease and from the excreta of the diseased person it again carries infection to the food of other healthy persons. Thus it goes on carrying infection throughout its life. Every one should take special care of this most dangerous carrier of diseases.

7. Dust. The accumulated dust in the dark damp corner of a room may contain germs of diseases and when swept with a broom stick distribute the germs to the food materials kept uncovered.

8. Linen and other articles soiled with *infective material sometimes* cause the disease.

9. Earth sewage soaked is a veritable source of infection.

10. Contacts. A person, who once suffered from the disease but now apparently cured, sometimes carries infection; and these contacts spread the disease by their soiled hand, mouth etc.



1. Polluted water 2a. Flies sitting on Ice cream, 2b. Pipe water, 3. Oysters, 4. Shrimps, 5. Fruits & Vegetables, 6. Fly, 7. Contaminated food, 8. Feeding bottle, 9. Sweeping dust, 10, Vomiting, 11. Evacuation in the open, 12, Sick bed, 13, Food infected by flies from privy.

Last of all comes the question of weather. Diarrhoea is often seen to be prevalent during some months of the year. The rains and the humidity must have some influence for the causation and the spread of the disease. The media of the intestines of human beings may be also a factor. Cleanliness about the kitchen, special choice of food articles, and the avoidance of the above mentioned causes are the preventive measures against the disease.

TUBERCULOSIS.

BY

DR. J. MUKHERJI M.B., *Ranchi*.

WHAT formerly was understood by *Phthisis and Consumption*, is now better described by the term 'Tuberculosis'. By it is meant the *disease caused* by a *germ called* Bacillus Tuberculosis. This germ is of vegetable origin, found wide-spread in nature. The *causation* of such a terrible disease as Phthisis by an agent of vegetable origin may come as a shock to the general public who can easily condescend to appreciate the inimical relations between animals and animals. But poetries and dreams apart, such is the bare fact. These bacilli are minute, rod-shaped, straight or slightly curved things, discernible only under microscope. They have got a great power of endurance against external influences and can retain their vitality for a long time outside the body. They may remain virulent in dried sputum for 2 months. They resist putrefaction. They can resist the digestive juice of stomach for 6 hours. They can stand very low temperature. The dry heat to the boiling point will not kill them within an hour. But moist heat will kill them sooner. A 5 per. cent carbolic acid solution can destroy them in a minute. Sun's rays kill them in 3 minutes.

They are of 4 varieties. One kind is found amongst the fish, another amongst the birds, a third amongst the mammals and the fourth amongst the men. They affect the cows, horses, pigs, monkeys, cats, dogs and the carnivora. Of the birds the fowls are particularly susceptible. The goats and the sheep, specially the latter, are rarely affected in nature. Human beings are affected mainly by the bovine and human types. Bones, glands and abdomen are generally affected by the bovine type. The lungs are principally affected by the human type.

Why India, where fresh air, clear sky and sun shine abound, should be so frightfully afflicted with this fell disease? The answer is not far to seek. Ignorance of hygienic rules and growing poverty of the people are the two most potent factors which largely contribute to the present appalling state of affairs. Quite a large number of our people do not know what is a square meal from year's end to year's end. The preventable diseases, particularly Malaria and Kala-Azar have not been properly tackled. Poor food and vitality-lowering diseases are eating into the sap of the nation. To this must be added the lack of the ideas of sani-

tary habits, disregard of the protecting rules of the marital life of the girls of the tender age, bad and unhealthy arrangements of the confinement period of pregnant women and the right way of rearing children. The harmful effects of the strict purdah are doubly so when our kith and kin are changing their rural life for the city life. More Mahomedan women die of this disease for stricter observance of purdah than their Hindu sisters. On scrutiny the age incidence bears an interesting relationship. The first two years of infancy, particularly the first, are more prone to catch this disease. Then up to the 13th year a comparative immunity is enjoyed. But during the teen ages and a little after, the 14th to 25th years command the largest number of victims. The child-bearing period is unusually a bad time for the women. The spitting habit so rampant amongst us is very harmful. A tuburcular man, for instance, discharges billions and billions of the germs through droplets while he coughs and hawks. The sputum after its discharge from the mouth becomes dried and floats in the air with the dust. Thus fresh infection is carried to other men. The educational system of the country can also not escape criticism. Want of proper cautions on the part of the friends and relatives on the false sentimental grounds and of the patient out of ignorance renders confusion worse confounded.

Now let us turn our attention to the preventive side of the disease. For, prevention is better than cure. There are 2 varieties of the disease—(1) the juvenile, benevolent type having a curative and protecting tendency, and (2) the adult or destructive type. Like the small-pox vaccination, the juvenile type or the early or first infection confers an immunity in us. Only fresh exposure to massive or prolonged infection i.e. taking in more germs than what are good for us, worries, want of proper nourishment, exposure to unfavourable weather, dissipation, want of sufficient rest and tranquility of mind are some of the factors which lead to a secure attack by lowering the power of resistance of the body. Unhealthy surroundings similarly help. Bad heredity merely badly influences a case. Otherwise most of the infections are after-birth events.

PREVENTIVE MEASURES.

In France and many other countries of Europe (Calmette's) B. C. G. vaccine is given per mouth to the new-born babe shortly after birth. Only those born of tuberculous parents are thus re-vaccinated after 5 years. This is presumed to give a life-long freedom from tuberculosis. Besides this, the following measures are also useful.

1. Have plenty of fresh air and sunshine.
2. Have some daily excercise.
3. Include in the food milk, fruits and eggs.
4. Maintain cleanly habits in personal, social and domestic hygiene.
5. Form habit of living in open air as much as possible. Open air classes in schools are wholesome.
6. Abstain from spitting habits.
7. Do not overdo in work, sports and recreations.
8. Avoid drunkenness and dissipation.
9. Do not eat and drink from the same pot.

10. Avoid congestion in the sleeping chamber or the same bed.

11. Keep away children from the tuberculous.

12. Do not pass lightly over the physical defects in the children e. g. drooping shoulders, enlarged neck-glands, shallow chest etc.

PLAGUE AND ITS PREVENTION.

BY

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PLAGUE is an infectious disease of a serious nature. Primarily it is a disease of rats and caused by a specific bacillus which is microscopically small and invisible to the naked eyes. The plague bacillus is conveyed from rat to rat or from rat to man by means of rat-fleas. The rat-fleas are tiny little insects living on the body of the rats. Their food is blood without which they die in a short time.

The plague bacilli though small in size have a very great penetrative power in them. Immediately they are injected in the system they travel along the lymphatics of the body and lodging themselves in the nearest neighbouring lymphatic glands, multiply rapidly and produce a " Plague Bubo". In cases of pneumonic plague they are directly inhaled by the persons attending on the patient suffering from the disease of that variety. The sputum of the patient contains millions of the plague bacilli. Sometimes the plague bacilli pass through the lymphatic system of the body and gain entrance in the circulation of the blood and cause a very grave variety of the disease known as " Septicæmic Plague ", which is almost always fatal. The Pneumonic plague begins like an ordinary pneumonia but with a very high temperature and sputum full of blood. Fortunately this variety is very uncommon in India and is known in a few regions in the north. The other three varieties of plague are Intestinal, Plague Ambulance and Pestis Minor.

How plague spreads:—The rat gets plague and dies at first and the fleas who were on him and living on his blood leave his dead cold body and attack any living being that happens to be near by, for their food. The nearest living subjects are the rats generally and sometimes the victims may be human beings, who, as aforesaid develop plague. The rat is solely responsible for the spread of plague. If there are no rats there will be no rat-fleas and consequently no plague.

Rats are very active and clever animals. They live on grains and drink good water but reside in dark, dirty and dingy corners of the house, in bad and ill-formed drains, store-rooms and kitchens. They adopt themselves most remarkably to the staple food of the community in which they live. They can live on any one of these grains-rice, wheat, bajiri, ragi, maize etc. They harbour on them a large number of fleas. During the time of plague epidemic and when many of the rats die all around them, they forsake

their deceased friends and run away to other localities carrying on them the infected fleas, which subsequently pass plague on whom-soever they live and bite.

There are twice as many rats in a town as there are human beings. The rats are so prolific that given sufficient food and shelter, a pair of rats may become 80 pairs in the course of a year. An adult rat approximately consumes about $\frac{3}{4}$ of an ounce of grains each day. The most modest average of loss of grains and property caused by a rat, as shown by some of the eminent authorities in India, is Rs. 4/- a year. Besides preventing plague the destruction of rats is therefore of very considerable value from an economic point of view.

Besides rats, persons from infected localities may carry on them or in their baggages infected rat-fleas, to healthy localities during the time of epidemic of plague.

Seasonal Prevalence:—Plague among rats is most acute when rat-fleas are most numerous. The rat-fleas are most numerous during the cold weather. Heat and direct sun rays are inimical to rat-fleas.

Symptoms:—After a period of 3 to 10 days since the bite of an infected rat-flea to a man, the disease shows itself by a sudden onset of chilliness, pain all over the body and a rise of temperature to 103 to 105 degrees, splitting headache, drunken gait and eyes and restlessness. In bubonic cases the affected lymphatic glands become painful, inflamed and enlarged in about 24 hours. The disease lasts from a week to 3 weeks. The fever, in favourable cases, reduces in about a week and the inflamed glands sometimes burst discharging a foul pus for a number of days.

Prevention:—As rat is solely responsible for the spread of plague all measures and attempts should therefore be towards its elimination. They are of two kinds 1. Measures of permanent utility. 2. Measures of temporary utility.

MEASURES OF PERMANENT UTILITY.

(*a*) Houses and buildings intended for storage of grains should be well built and rendered rat-proof. Shops, warehouses, granaries, stables and the like separated from dwelling houses, and the concrete floors and the roofs of buildings constructed of such materials as cannot harbour rats.

(*b*) As water is essential for the life of rats, no water or fresh vegetables shall be accessible to rats in wholesale grainstores.

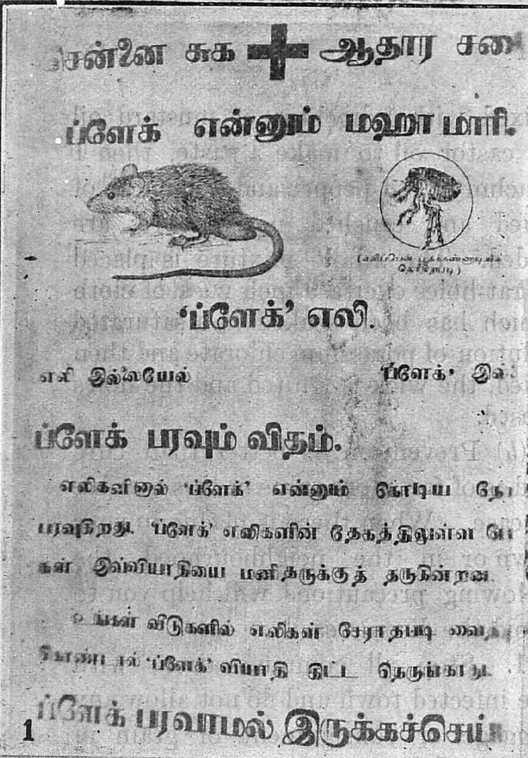
(*c*) No waste food material, garbage or rubbish conducive to the feeding of rats shall be thrown in places accessible to them.

(*d*) The streets and lanes shall be kept in good sanitary condition and the drains shall be constructed deep and of good design. All small holes shall be closed so as not to allow rats to take shelter in them.

(*e*) As rats usually gain access into the house through drains an iron grating shall be fixed at the entrance to prevent their entry.

MEASURES OF TEMPORARY UTILITY.

(*a*) *Rat destruction:*—Traps and poison baits are used for this purpose. The operations must be extensive and sustained. Trapping rats alive and then destroying them have yielded better results. The traps shall be selected



1. *The Plague Chart (Tamil) explaining the dissemination of plague by rats.* 2. *The Plague Bacilli.* 3. *Rat Flea.* 4. *The boy is carrying a dead rat. His mother is beating him for having done so unprotected and with bare hand.* 5. *A desolated street of an infected locality. Note the Policeman guarding and patrolling.* 6. *Doctor examining persons to find out whether they are inoculated against plague or not. These four persons are carriers of dead bodies.* 7. *Collection of Rat-traps from infected localities.* 8. *Cleaning and baiting of rat-traps.* 9. *Sun disinfection of an infected house.*

with great care. There are many traps in the market that are defective and work unsatisfactorily. The size and the strength of the trap, the size of inlet, and the accuracy with which the flap fits the frame, are all important points in determining the efficiency of the trap. Experience has shown that spring-traps have a much greater efficiency than the wire-cage ones. Traps after use should be placed in boiling water to remove all traces of smell and then well dried and before being reset they should be lightly oiled and baited. The baited traps should be set at each night and collected in the morning.

If destruction by poison is decided on, the best and the safest rat poison is Barium Carbonate which is also the cheapest. The poison pills are usually supplied by the health authorities, free of charge. Since rat prefers his own local and staple food the poison should be mixed with it only, for obtaining best results. Baits may be prepared in the forms of pills each containing about three grains of Barium Carbonate and nine grains of flour. They should be made fresh each day as a hard stale bait is rarely eaten by rats. Clean hands and dishes are necessary to avoid imparting to the baits extraneous taste and odour. The poison pills are harmless to children and domestic animals.

Other favourite poisons are (1) one part of white arsenic to four of rice; (2) Phosphorus rat-paste. An effective way of killing rats and their fleas in their runs is by the use of "Neem-batti". It is made by mixing potassium nitrate 1½ drachms, powdered potassium chlorate, 2 drachms; and sulphur 2 drachms; these are powdered and mixed with 5 drachms of mustard oil or castor oil to make a paste, then 1 drachm of red pepper and a handful of dried and crushed neem leaves are added. The whole mixture is placed in rat-holes over a 9-inch wick of cloth which has been soaked in a saturated solution of potassium chlorate and then dried, the wick is ignited and the holes closed.

(*b*) Prevention is better than cure and is of far more value in this terrible disease. When there is plague in your town or in the neighbourhood the following precautions will help you to avoid the disease easily.

1. Stop all communications with the infected town and do not allow any baggage or consignment of grain in your town not disinfected by the health authorities.

2. Get youself inoculated against plague. This protects you a good deal for at least about 6 months. Inoculation is now a well-tried remedy which has withstood the test of time. Apart from this it instils in you confidence and courage which are so necessary in averting a panic.

3. As rat-fleas cannot fly or jump for more than a foot in height, sleeping on a cot or a "Chowpai" is advisable during the time of plague epidemic.

4. Bazaars and godowns where food-stuffs are openly exposed breed the greatest number of rats and are the worst centres of plague. It is better to avoid as far as possible purchasing provisions in an infected locality. If perforce you should do so, you should expose them to hot sun at least for *six* hours before you take them in your house. Sun's rays kill all the rat-fleas.

5. Do not go to an infected locality unless your feet and legs are well

covered with boots and stockings. Since fleas are apt to be carried in your clothes it is highly advisable to change them outside your house and place them in the hot sun, a considerable distance from the dwelling place. It is not good to move about in an infected locality in the evenings or wherever there is no sufficient sunlight. The fleas roam about in the darkness but do not come out in sunlight. All your clothes from your "Dhoby" should be sun-disinfected before they are brought to your house. It is likely that there may be some rat-fleas in them; for a dhoby collects and washes clothes of ever so many persons of different localities.

6. A general cleaning, white-washing of houses and closing all the rat-holes in the rooms of the house are of great importance during the time of an epidemic of plague. Keep your doors, windows and ventilators open all the day, so as to allow sunlight to come in. Cat is the natural enemy of rats, as such try to rear one in your house.

7. If practicable, the infected locality should be evacuated for about a month and a half, for it is safe to be away from danger.

8. If a dead rat is found to be in a house you should be very careful in its handling. A rat-fall in a house is the first warning of the coming danger of plague. Evacuate the house at once and get it disinfected. The health authorities will do it for you. An infected house can be best disinfected by removing a portion of the roof to allow direct sun's rays in all the rooms. All the luggage and samans in the house should be sun-disinfected. Take care that you do not touch or approach a suspicious dead rat, for the fleas on it that are eagerly waiting for a fresh prey may settle on you. The best way to remove the dead-rat is to pour kerosine-oil on it and for a few feet all around it and remove it with the aid of a long pair of tongs or a long stick and then have it immediately burnt.

In some places, the system of "Village Boycott" has been adopted with imminent success by the villagers. No plague refugee or a beggar from an infected locality is ever admitted into their village unless he remains outside the village for a couple of days and until his clothes and personal effects are sun-disinfected. If this excellent example be only followed in the towns and elsewhere, surely there will be much less chances for the spread of this terrible disease.

THE SMALLPOX PROBLEM

BY

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The smallpox problem is one of the oldest in the field of public health. The advance of knowledge of public health and the general improvement of sanitation have not materially affected the incidence of this disease. Vaccination is the only effective control for smallpox, and although this method was discovered as early as 1796, it has not been practised with thoroughness or on organised lines as to effectively control the infection.

There has been a certain amount of progress made in vaccination in India during the last decade or two, and this has altered our smallpox problem. Smallpox in earlier days was mostly a disease of childhood, and formed one of the leading causes of mortality among infants and young children. Epidemics of smallpox used to break out periodically, usually once in five years. The periodicity was probably determined by climatic factors or accumulation of non-immune population or both. But now after some years of successful primary vaccination, the periodicity of smallpox outbreaks is not so well marked, and the disease from being the chief infection of childhood has become more a disease of adults. The effect of vaccination on the disease is also not so apparent now as in the earlier days. When smallpox was a disease of childhood, the unvaccinated were attacked, and died, in large numbers, while the vaccinated escaped. But in the smallpox of adult life, the un-vaccinated man and the vaccinated man who had lost the protection afforded by his primary vaccination in early life, are equally affected. This is partly responsible for some of the sentiment in favour of the anti-vaccinationists. The smallpox problem of the present day is a problem of an adult infection, and one to be controlled by systematic revaccination.

I am sure that this aspect of the present day smallpox infection has been well recognised by all public health workers, but I am not sure that the medical profession—especially the general practitioner whose place in the control and prevention of diseases still remains supreme—has fully realised it. I wish in this article to illustrate this aspect of our smallpox problem by data gathered in an intensive study in Travancore.

In an article in the Indian Medical Gazette in November 1931, I had given a short account of an intensive type of public health activity carried on experimentally at Neyyattinkara in Trivancore State. The Health Unit at Neyyattinkara included an area of 28 square miles and a population of about 40,000 people, and the very first problem it had to face was an outbreak of smallpox. The epidemic that was studied consisted of 240 cases distributed over about eight months. The disease was the continuation of an epidemic which was prevalent almost throughout the State for more than an year previously. The state of vaccination was not satisfactory. In the

Health Unit area after more than an year of smallpox outbreaks, when vaccination was carried on with more than usual vigour, the data gathered at the time the Unit was started, showed that about 7,000 out of the population of 40,000 was unprotected against smallpox even by a primary vaccination. The first activity of the Health Unit was an intensive campaign of vaccination which went side by side with the epidemic until the latter was eventually controlled.

The 240 cases that occurred in this outbreak were carefully studied and some facts relating to those cases are given below.

There were 63 deaths among the 240 cases of smallpox reported giving a case mortality of 26.25% which is rather a high percentage. The mortality rate was 47.08% among the unvaccinated, 51.66% among those with primary vaccination and nil among those with a re-vaccination. The fatal termination was usually from the 7th to the 17th day.

The source of infection was mostly from the family or from neighbouring houses, in both the cases probably by contact. The following table gives the main sources of infection and the number infected from each of these sources.

Source of Infection.	No. of cases.
Imported cases. ...	5
Infection brought from outside the village. ...	59
Infection from neighbourhood. ...	98
Infection from same house or family.	63
Unknown sources. ...	15
All sources ...	240

The vaccinial condition of the cases investigated is given in the following table :

Age group.	Previous attack of smallpox.	Successfully revaccinated.	Successfully vaccinated.	Vaccinated during incubation period.	Un-vaccinated.	Total.
Under 1 year ...	...	...	...	2	6	8
1 to 4 years ...	...	...	1	2	15	18
5 to 9 ,, ...	...	...	2	...	12	14
10 to 14 ,, ...	...	1	2	...	16	19
15 to 19 ,, ...	...	1	11	...	15	27
20 to 29 ,, ...	1	1	34	...	17	53
30 to 39 ,, ...	...	3	21	...	6	30
40 to 49 ,, ...	1	...	25	...	4	30
50 tc 59 ,, ...	...	...	18	...	12	30
60 and above ...	...	...	6	...	5	11
All ages. ...	2	6	120	4	108	240

The occupational distribution of the 240 cases of smallpox was as follows:

Occupation.	No. of cases.
Child	44
School	6
Domestic	45
Weaving	13
Trade	37
Agriculture	71
Government service	4
Other pursuits	17
Unknown	3
Total ...	240

The two tables given above bring out very clearly the facts already mentioned at the beginning of this article. It is seen that in this epidemic of smallpox that was investigated, the high levels of smallpox incidence is from the early ages to the 30th year among the unvaccinated and above 20th year among those who were vaccinated once. More vaccinated people were affected than unvaccinated people on account of the fact that the population itself consists of more vaccinated than unvaccinated people. The occupational distribution shows that the school children and Government servants who constitute a good percentage of population were the least affected. These represent the only two groups among whom revaccination is compulsory. Only 6 out of the 240 cases were among revaccinated persons and all these were mild cases. It was also seen that hæmorrhagic and confluent types of smallpox were met with mostly among adults, or those over middle age and that the primary vaccination of these people in their early childhood had no effect in modifying the severity of the infection contracted in their later age.

The results of the study of the epidemic of smallpox in the Neyyattinkara Health Unit bring out prominently the features of our present smallpox problem. It is, as I have already said, a problem of adult life now, and one to be controlled only by revaccination. As far as smallpox is concerned, Neyyattinkara may be considered to be fairly representative of conditions obtaining in the rest of Travancore State and perhaps in many parts of British India, and the smallpox problem is the same in all those places.

Primary vaccination has now become compulsory in all districts in India. In the rural areas of Travancore it became compulsory from March 1932. Smallpox however is still doing considerable damage as a disease of adults, and this can be controlled and smallpox shunted out from its leading place in the weekly mortality reports, where it has remained secure for many years, by making revaccination also compulsory. I understand that arrangements have been made for this in the Madras districts through the energetic efforts of Lieut. Col. Webb. It is a piece of legislation that can be copied with advantage immediately in the Native States also. But legislation alone cannot do much. It took many years after primary vaccination was made compulsory under law to bring it into efficient operation. Intensive propaganda is necessary to make compulsory revaccination also effective in practice, and this propaganda cannot be done

better than by the practitioners of medicine, who are the final authorities in all such questions in the little groups who look up to them in health and in disease. The very first step in the solution of public health problems is to put the problems clearly before the critical group represented by the practitioners of medicine, and that is my excuse for presenting this short note on our present smallpox problem to their notice.

IMPORTANCE OF SANITATION.

BY

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People of this country hardly realise the importance of sanitation, in fact the consensus of opinion is that the money spent on sanitation is simply wasted. If there is any truth in this obviously mistaken opinion it is because that hitherto much of the money spent on sanitation has been wasted for want of a proper and definite scheme or organisation. People seem to think that sanitation is very cheap. This however, is a mere delusion; it is not so. It is in fact a very costly commodity and a high and proper standard of public health cannot be maintained without launching into expenses. Modern civilisation is based principally on scientific sanitation and industry and the successful campaign against disease and increased happiness and contentment of the people through industrial development depend solely upon the improved sanitation of the country. Neglect or inattention to sanitation leads to lowering in the standard of health and illness and also to lessening of vitality; this in turn leads to loss of efficiency of the labouring population or wage earners.

2. This important point has not yet been fully realised by the people of this country. It has failed to attract the attention that it deserves because the losses involved occur, so to say, in little leaks. Insanitation leads to falling off of personal efficiency and the labourer cannot render full value for his wages. This means a loss to his employer, be he a business man or a farmer, who in turn tries his best to recoup his losses by reducing the pay for his labour, thus passing the loss on to his employees. Both, therefore, suffer from smaller volume of business and lesser wages because of the reduced prosperity of the community. Moreover the family loses time in nursing the sick and also money in treatment and special diet and so forth. The manufacturer also loses on account of the lowered efficiency of the operatives and from the partial dislocation of work due to the illness of his employees. As a result of lessened output of freight, the railways and other transporters of goods also suffer from loss of income. So there goes on a vicious circle.

3. The children, who are particularly very susceptible to all sorts of insanitary environments are first to suffer, and so they acquire a defective education because of the lost days at

the school and also of the inefficient days. This is really a very serious loss.

4. We often find that people abandon their village homes and go elsewhere for a change in quest of health; this is also a drain on one's resources. These simple facts are no doubt quite impressive.

5. Still one not infrequently comes across persons who ask "Is sanitation productive of actual benefit"? The answer is simply an emphatic *yes*, and it is shown in various ways. The death rate of England and other civilised countries is steadily decreasing; in England in 1841-50 out of every 1000 people 22·4 died, in 1891-5 the death rate was reduced to 18·7 and now it is about 10 or 12 per 1000, whereas in India it is about three times as much. We also find that certain diseases like plague, cholera, typhus fever, malaria and leprosy have been entirely banished from England. This again shows what scientific sanitation can do for a country.

6. To cite an Indian illustration; in Madras general sanitation, improved conservancy and drainage, the supply of pure water and the abolition of the foul tanks and wells have greatly reduced malaria and the prevalence and fatality of dysentery and also lowered the incidence of death rate of cholera, produced a general improvement in the health of the population and raised the standard of well being.

7. These few examples are enough to give one an idea of the triumphs of modern sanitary science and also to convince people of the importance of sanitation which is no doubt the principal avenue for a nation to increased strength and prosperity.

DISEASE DUE TO CARELESSNESS.

"Good manners maketh good health." This maxim epitomises the views of Professor H. Kert, Medical Officer of Health for Newcastle-upon-Tyne, who said in an interview that many individual acts of carelessness and want of consideration for others imperilled the health of the community. 'For instance,' he said, "nothing is more depressing to health than an un-aired, foul-smelling room especially if it be dark and dismal also". "In many homes one sees unwashed plates and cups lying on the table all day, and the remains of food left in dishes. Those are the places that flies infect in large number. 'A dirty yard, with an untidy overflowing dust-bin, is a danger to the neighbourhood. Spitting, another filthy and dangerous habit was also prevalent. In the up-bringing of children, consideration for others should be constantly insisted upon and enforced. Even untidiness is merely lack of thought for the comfort of others and the want of training to consider other people are at the bottom of the appalling litter that disfigures our parks and public places.—*Practical Medicine.*

OUR PHOTO COMPETITION.

Our subscribers are hereby informed that sufficient number of photos was not received; and so no contest was held and no prizes were awarded.